

Despite several statements to the contrary, such as "the cause of its disappearance cannot be associated with cultivation or with any other interference with its requirements" (Frohawk, 1914), hops were not grown commercially in Scotland after 1871 or in Wales after 1874; in England, outside of the prime hop growing counties the acreage declined throughout the 19th century and its distribution completely collapsed after 1870. The butterfly was last recorded in Scotland in about 1870 and it disappeared from an accelerating number of English counties during that same decade. Also, hop washing, bine burning, and the increasing deployment of more efficient pesticides after the early 1880's contributed to local rarity.

(to be concluded)

MUD-PUDDLING BEHAVIOUR OF THE GREEN-VEINED WHITE BUTTERFLY. — Mud-puddling behaviour is a well documented and common phenomenon of male butterflies of tropical and mediterranean regions, but is of less common occurrence in temperate regions. The principal stimulant to these male aggregations is described as sodium salt (Arms *et al.*, *Science*, **185**: 372-374.) and large groups of males usually congregate and feed on damp ground contaminated by faeces and urine, presumably these areas are rich in available amino-acids.

On 5 August 1986 I was visiting a coniferous area of woodland in north Bucks., a sunny but cool day after an evening of very heavy rain. On one 300 metre length of ride I noted seven aggregations of feeding male green-veined white butterflies, at the edge of puddles. Each group of males was densely packed, with approximately one to five centimetres between individuals. The total number of males within each group were; 37, 21, 18, 17, 14, 13 and 6. No other aggregations of this butterfly were noted at any other puddles on this or any other ride. Close examination of the attractive and non-attractive puddle margins revealed no evident differences between the puddles themselves and no signs of faeces. However, those puddles that were attractive were all immediately adjacent to vegetation that had been mown within the previous week. Presumably the heavy rain of the previous evening had washed the soluble products of decomposition into these puddles, these being attractant to this butterfly. What is of interest is whether this is a rare phenomenon or is more common than generally believed. Also, is sodium salt involved in instances as described here? T. G. SHREEVE, 4 Chiltern Close, Princes Risborough, Aylesbury, Bucks. HP17 0EA.